STATE OF HAWAI`I
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
Honolulu, Hawaii

180-Day Exp. Date: December 6, 2010
CDUA HA-3549

September 22, 2010

Board of Land and
Natural Resources
State of Hawaii
Honolulu, Hawaii

REGARDING: Keōpū Well, Reservoir, and Transmission Line

APPLICANT: Hawai`i Housing Finance and Development Corporation

AGENT: Glen Koyama, Belt Collins Ltd., 2153 N King St., Suite 200, Honolulu 96819

LOCATION: Hienaloli, Lanihau, North Kona, Hawai`i

TMK: (3) 7-5-013:022

AREA OF USE: 3.7 acres

SUBZONE: Undesignated (Proposed: Resource)

DESCRIPTION OF AREA:

The project area is on the western slops of Hualālai. The rectangular, 78.4-acre parcel measures approximately 500 feet by 6600 feet, and extends east and upland from Māmalahoa Highway. It is in an Undesignated Subzone of the State Land Use Conservation District; the Conservation Plan proposes a "Resource" designation. **Exhibit 1** shows the Conservation District lands in the area.

The project site is relatively steep, with an average slope of 17 percent. A natural drainage crosses the lower section of the parcel diagonally through the well site. The depth of the drainage channel varies from two to four feet, and the width varies from twenty to forty feet. This channel limits the potential available area for the proposed facility. **Exhibit 2** shows the existing site conditions.

The Keauhou Aquifer System comprises the southern half of the Hualālai Hydrologic Sector, as shown in **Exhibit 3**. Due to the highly permeable soil there are no perennial

streams in the aquifer, and almost no surface runoff. The few small intermittent springs likely occur as groundwater seepage from shallow aquifers perched on soil and ash beds.

The aquifer is composed of both basal groundwater and high-level water. The basal lens extends 1.5 to 4.5 miles inland from the coast, with a maximum water elevation of 5 feet above sea level. It is recharged primarily be the seaward flow of high-level water. The existence of high-level water (areas with water levels above the basal groundwater level), was first discovered in 1990, and has since been noted at 14 wells in the area. Geologists are not sure of the nature of the confining geologic structures that create the high-water areas.

The Keauhou Aquifer System was designated as a basal water system, as it was delineated prior to the discovery of high-level water in the area. The profile of the high-level water heads suggest that the region of the Keōpū well might act as a "sink," with water flowing in its general direction.

Rainfall and fog drip are the principle sources of the region's groundwater. According to CWRM, the estimated groundwater recharge of the aquifer system is 87 million gallons per day (MGD), and the sustainable yield 38 MGD.

The potential production of current wells and shafts in the aquifer system would be 16.58 MGD, or 43% of the sustainable yield. The actual water use (2008/2009) for the 11 DWS wells and 9 private wells is 10.7 MGD. Projected demand based upon growth figures for the region is expected to increase by 40% over the next 15 years, or to 18.6 MGD by 2025.

A fauna survey sighted `io (Hawaiian hawk, *Buteo solitariusand*) and pueo (Hawaiian bat, *Asio flammeus sandwichensis*). It is possible that the `ua`u (Hawaiian petrel, *Pterodroma sandwichensis)* and `a`o (Newell's shearwater, *Puffinus auricularis newelli*) fly over the project area between the months of May and November.

There are three main botanic ecosystems at the well site: "managed lands" composed of former pasture, with no native species present; a low stature *Schinus/Psidium* forest dominated by pepper tree and guava with little understudy; and mono-dominant groves of bamboo. No federally-listed species were found.

There were five historic sites – four core-filled ranching/boundary walls and one terrace wall along the drainage - associated with ranching in the project area. Each as been documented in order to mitigate any possible negative impact from the project. **Exhibit 7** shows the archeological sites in relation to the proposal.

The parcel is currently undeveloped with the exception of a dirt jeep road and an exploratory well facility.

PROPOSED USE:

On August 27, 1999 the Board of Land and Natural Resources approved Conservation District Use Permit (CDUP) HA-2907 for an exploratory well and associated infrastructure, including a temporary access road, at the site. The Hawai`i Housing Finance and Development Corporation (HHFDC) is now proposing to convert the site to permanent production to serve the North Kona Water System, including the residential communities of Keahuolū and Kealakehe.

The existing well is at 1601 feet elevation, and has a depth of 1799 feet (-198 feet mean sea level). The shaft is in steel casing with a diameter of 18 inches to a depth of 1641 feet. The pump used in the initial tests has been removed and the shaft's top opening has been capped.

Converting the site to permanent production will involve the following elements:

- **Outfitting the well for production.** This involves installing a permanent submersible pump into the shaft of the well, building a control building with chlorination unit adjacent to the well, installing an electrical line on utility poles and an on-grade electrical transformer, and placing a back-up generator in the control building. Recasing of the well will not be necessary.

- **Building a reservoir.** The applicant proposes to construct a 2.0 million gallon reservoir approximately 600 feet above the well site, at the 1672-foot elevation level, to provide storage and controlled feed into the County water system. This will also involve installing a 12-inch pipe from the well to the reservoir, and a 16-inch pipe from the reservoir to a planned 16-inch transmission line along Māmalahoa Highway. The proposal will require significant excavation to accommodate a level foundation.

- **Upgrading the access road.** The access road from Māmalahoa Highway will be converted to a paved concrete driveway. The road will be 12 feet wide and extend approximately 900 feet from the highway onto the property, and approximately 640 feet to the reservoir across a natural drainageway. The drainageway will be paved at-grade with the terrain.

- **Site improvements.** Additional work includes installing an overflow/drainage line outside the reservoir; and installing a chain link fence around the well and control building, and around the reservoir.

Exhibit 4 shows the proposed well and ancillary facilities, **Exhibit 5** the proposed reservoir, and **Exhibit 6** the terminus of the water line.

It is anticipated that the production well will be capable of producing up to 2.0 million gallons per day. The applicant is proposing to commence work in the first quarter of 2011, and to complete work within six to twelve months.

The project area is in owned by the State of Hawai`i, and encumbered by Executive Order (EO) No. 4166 to the State Division of Forestry and Wildlife (DOFAW). Once the conversion of the well is complete HHFDC plans to turn over the facility to the Department of Water Supply (DWS) for ownership and operation. This transfer will require the withdrawal of the site from the Forest Reserve and EO No. 4166, the possible creation of a parcel through subdivision, and a new EO resetting aside the site or parcel to DWS.

SUMMARY OF COMMENTS:

The Office of Conservation and Coastal Lands referred the application to the following agencies for review and comment: the State Department of Health; Office of Hawaiian Affairs; the County of Hawai`i Planning Department; and Department of Land and Natural Resources (DLNR) Commission on Water Resource Management, Engineering Division, Land Division, Division of Forestry, Division of Conservation and Resource Enforcement, and Historic Preservation Division.

A notice of the application was placed in the June 23, 2010 edition of the Office of Environmental Quality Control's *Environmental Notice*. In addition, copies were available for review at the Thelma Parker and Kailua Kona Public Libraries.

Comments were received from the following agencies:

County of Hawai`i Planning Department
A priority of the Kona Community Development Plan (CDP, 25 September 2008) is to encourage transit-oriented development (TOD), and to *flexibly enable water allocation policies to support the Kona CDP land use policy to concentrate growth within TODs.* The Department notes that the Keahuolū development has been identified as a TOD, and therefore the Department has no objection to the proposal.

DLNR Land Division
No comment

DLNR Commission on Water Resource Management (CWRM)
CWRM notes that the applicant will need to secure pump installation and well construction permits from CWRM if the CDUP is granted.

ANALYSIS:

Following review and acceptance for processing, the Applicant's Agent was notified, by letter dated June 15, 2010 that:

1. The Keopu Well, Reservoir, and Transmission Line project is an identified land use within the Conservation District, pursuant to Hawai`i Administrative Rules

(HAR) §13-5-22 *Identified land uses in the protective subzone,* P-6 PUBLIC PURPOSE USE, (D-1) *Land uses undertaken by the State of Hawai`i or the counties to fulfill a mandated governmental function, activity, or service for public benefit and in accordance with public policy and the purpose of the conversation district. Such land uses may include transportation systems, water systems, communication systems, and recreational facilities.* The final decision as to whether to grant, modify, or deny the permit lies with the Board of Land and Natural Resources.

2. Pursuant to HAR §13-5-40 *Hearings*, no public hearing will be required.

3. Pursuant to HAR §13-5-31 *Permit applications,* the permit requires that an environmental assessment (EA) be carried out.

Belt Collins presented a Final EA in March 2010; Hawai`i Housing Finance & Development Corporation published a Finding of No Significant Impact (FONSI) in the Office of Environmental Quality Control's (OEQC) *Environmental Notice* on March 23, 2010.

§13-5-30 CRITERIA:

The following discussion evaluates the merits of the proposed land use by applying the criteria established in HAR §13-5-30.

1) *The proposed use is consistent with the purpose of the Conservation District.*

The objective of the Conservation District is to conserve, protect and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.

Staff is of the opinion that the proposed action will not negatively impact the natural resources of the area. The applicant has provided a thorough assessment of the area's hydrology, and CWRM has concluded that the proposed water usage is sustainable.

2) *The proposed land use is consistent with the objectives of the Subzone of the land on which the use will occur.*

The project area is currently in an Undesignated Subzone. The Conservation Plan calls for it to be designated "Resource." Pursuant to HAR §13-5-14, the objective of the Resource Subzone *is to designate open space where specific conservation uses may not be defined, but where urban use may be premature.*

The project is designed to accommodate a growing population makai of the subject parcel, in the urban and agriculture districts. It will not facilitate greater development or urbanization of the Conservation District.

3) *The proposed land use complies with the provisions and guidelines contained in Chapter 205A, HRS entitled "Coastal Zone Management", where applicable.*

The proposal is exempt from the definition of development, and will not need a Special Management Area permit.

4) *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.*

The proposed use appears to be sustainable, and should not negatively impact groundwater flow in the region. There are no perennial surface streams in the aquifer, and the few springs appear to draw from surface ground water supplies.

5) *The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

The potential site will necessitate a significant amount of grading. Site selection was limited by the presence of a drainage channel cutting diagonally across the parcel.

6) *The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable.*

Staff is of the opinion that the natural beauty and open space characteristics of the portions of the lots within the Conservation District will be maintained.

7) *Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.*

The proposed project does not involve subdivision of Conservation District land.

8) *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

Staff is of the opinion that the proposed addition will not be materially detrimental to the public health, safety and welfare.

DISCUSSION:

The proposed well, reservoir, and transmission line is an identified use within the Conservation District according to the Hawai`i Administrative Rules (HAR), §13-5-23, P-6 PUBLIC PURPOSE USES.

The parcel is on an undeveloped lot on the western slope of Huālalai. The steep parcel is dominated by invasive trees such as guava, pepper tree, and bamboo.

The region is expected to experience high growth rates. The Kona Community Development Plan calls for the development of "transit-oriented" communities, and calls for water allocation policies to be developed in support of this. The proposed well and reservoir would support Kaahuōlū, one of the transit oriented developments in North Kona. The well would also support the Kahalu`u and Hōlualoa area.

The proposed well would draw from the Keauhou Aquifer System, which comprises the southern half of the Hualālai Hydrologic Sector. The aquifer is composed of basal groundwater and high-level water, and is primarily recharged through rainfall and fog drip.

Current public and private wells supply approximately 10.7 MGD, and could provide as much as 16.58 MGD if they each operated on a 16-hour day. Projected growth in the area will lead to a demand for 18.6 MGD by 2025. This growth is projected to occur in the Agriculture and Urban districts; the well should not lead to increased development pressures on Conservation lands.

The proposed well will supply an estimated 2 MGD. According to CWRM, the estimated groundwater recharge of the aquifer system is 87 million gallons per day (MGD), and the sustainable yield 38 MGD. The proposal therefore falls within the parameters of sustainability.

The conversion of Keōpū to permanent production will have a minor impact on neighboring wells. Tests have shown that the nearby Keōpū-Pu`uhonua Well will experience a drawdown of 0.6 feet, and the Douter Well less than 0.6 feet.

The existing tank is similar in size and appearance to other tanks in Hawaiian communities. Its use and appearance are thus consistent with the culture and the landscape. The tank will be a passive use, and there should be no impact on the neighboring community besides the original construction and occasional periods of repair and maintenance.

There is a drainage channel that cuts diagonally across the parcel. This channel limits constrains the available area for development. As a result, the proposed reservoir will be placed above the well, and across the drainage channel. The steepness of the site will necessitate significant grading to accommodate a level foundation.

Mitigation measures for the proposal are incorporated in the EA include Best Management Practices, a Stormwater Pollution Prevention Plan, Chapter 401 Water Quality Certification, and an NPDES permit.

A new CDUP will be needed should the applicant pursue a consolidation and subdivision of the parcel.

Staff is of the opinion that the proposed project will not adversely affect the land, resources, or community. The proposal should actually benefit the community of North Kona by improving the water supply.

Staff therefore recommends,

RECOMMENDATION:

Based on the preceding analysis, Staff recommends that the Board of Land and Natural Resources APPROVE this application for the Keōpū Well, Reservoir, and Transmission Line at TMK (3) 7-5-013:022, Hienaloli, Lanihau, North Kona, Hawai`i , subject to the following conditions:

1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, State and county governments, and the applicable parts of HAR §13-5-42;

2. The applicant, its successors and assigns, shall indemnify and hold the State of Hawai`i harmless from and against any loss, liability, claim or demand for property damage, personal injury or death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit;

3. The applicant shall comply with all applicable Department of Health administrative rules. Particular attention should be paid to HAR §11-60.1-33, "Fugitive Dust" and to Chapter 11-46, "Community Noise Control," and Chapter 11-54 National Pollutant Discharge Elimination System;

4. Before proceeding with any work authorized by the Board, the applicant shall submit four copies of the construction plans to the Chairperson or her authorized representative for approval. Three copies will be returned to the applicant. Plan approval by the Chairperson does not constitute approval required from other agencies;

5. Any work or construction to be done on the land shall be initiated within one year of the approval of such use, in accordance with construction plans that have been approved by the Department; further, all work and construction of the residence and infrastructure must be completed within three years of the approval.

6. The applicant shall notify the Office of Conservation and Coastal Lands in writing prior to the initiation, and upon completion, of the project;

7. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;

8. The applicant will use Best Management Practices for the proposed project;

9. The applicant will give preference towards using native plants all landscaping work;

10. The applicant understands and agrees that this permit does not convey any vested rights or exclusive privilege;

11. In issuing this permit, the Department and Board have relied on the information and data that the applicant has provided in connection with this permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete or inaccurate, this permit may be modified, suspended or revoked, in whole or in part, and/or the Department may, in addition, institute appropriate legal proceedings;

12. In the event that unrecorded historic remains (i.e., artifacts, or human skeletal remains) are inadvertently uncovered during construction or operations, all work shall cease in the vicinity and the applicant shall immediately contact the State Historic Preservation Division;

13. The applicant shall provide documentation (i.e. book/page document number) that this approval has been placed in recordable form as a part of the deed instrument, prior to submission for approval of subsequent construction plans;

14. The applicant will contact OCCL for any permitting requirements should they change the scope of the project;

15. That failure to comply with any of these conditions may render this Conservation District Use Permit null and void.

Respectfully submitted,

Michael Cain
Staff Planner

Approved for submittal:

Laura H. Thielen, Chairperson
Board of Land and Natural Resources

TMK (3) 7-5-013:022 Lanihau, North Kona, Hawaii

Produced by MC @ OCCL *September 7, 2010* *All boundaries are approximate*

Exhibit 1

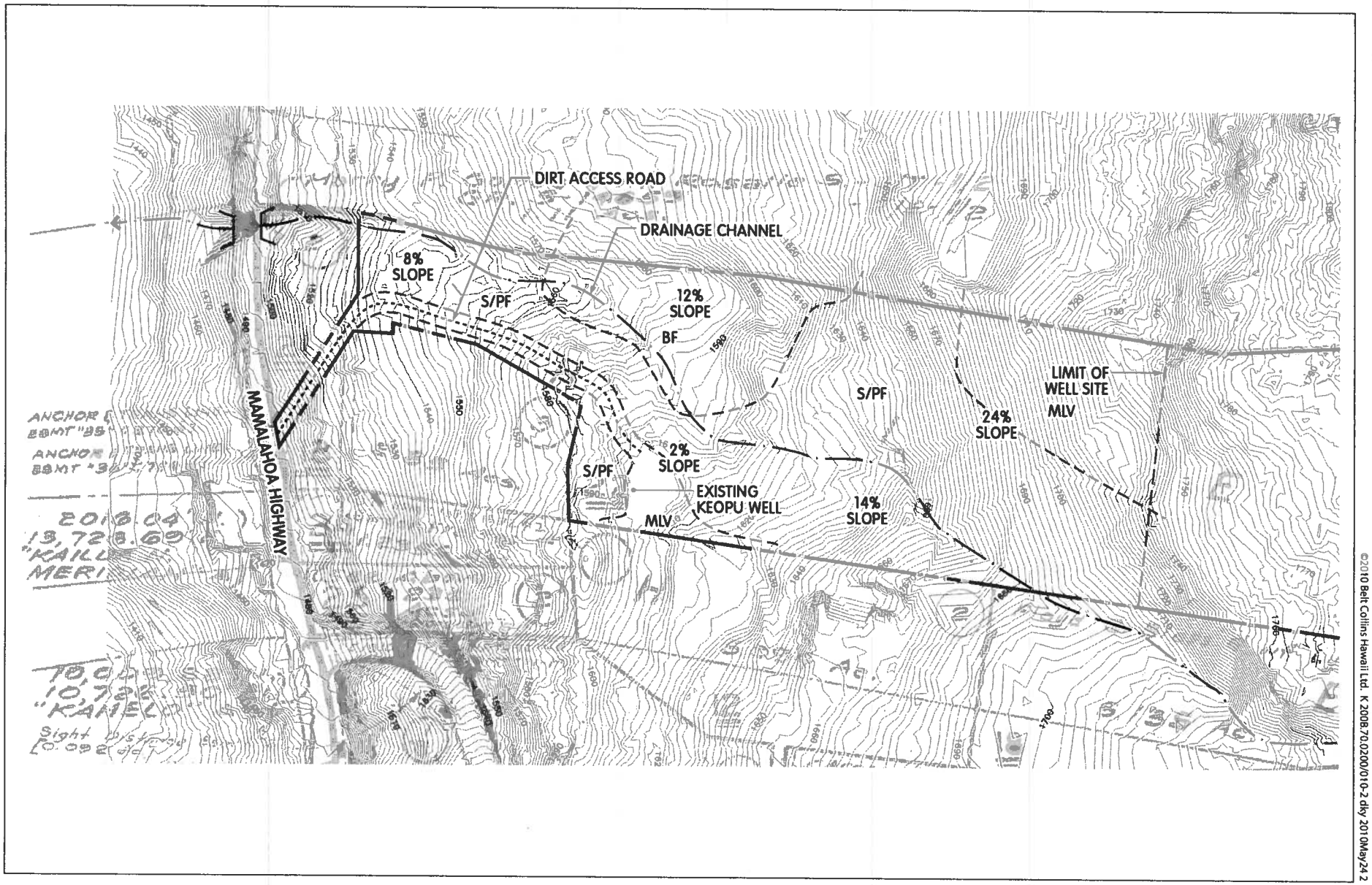


EXHIBIT 2

BELT COLLINS

NORTH

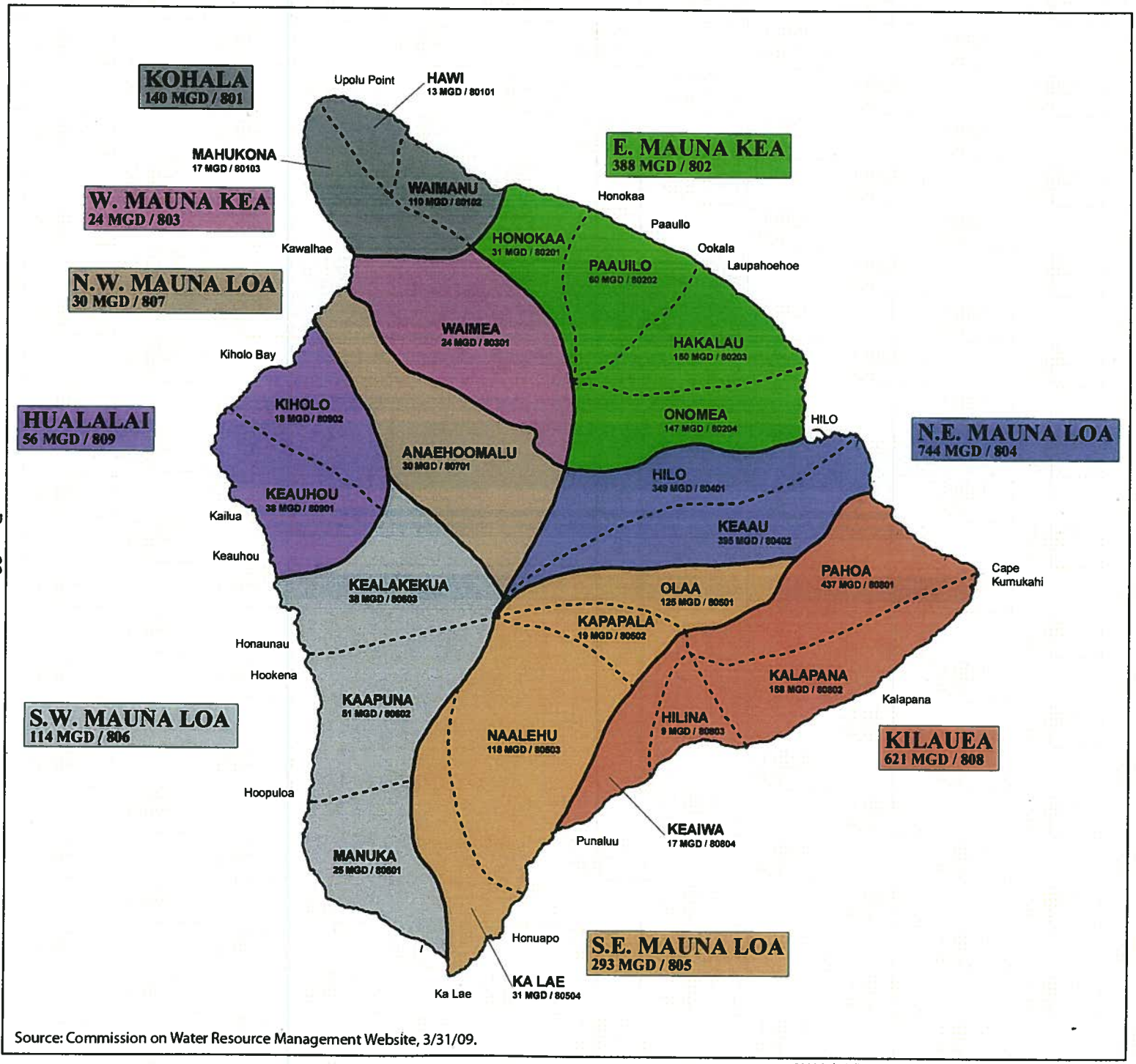
0 120 240
SCALE IN FEET

VEGETATION TYPES

MLV	Managed Land Vegetation
S/PF	Schinus/Psidium Forest
BF	Bamboo Forest

Figure 10
EXISTING SITE CONDITIONS
Keopu Well
North Kona, Hawaii

EXHIBIT 2



Source: Commission on Water Resource Management Website, 3/31/09.

Figure 12
HYDROLOGIC UNITS

Island of Hawaii
Total = 2,410 MGD

Hydrologic Units:
Sustainable Yield/Aquifer Code

NORTH

0 7.5 15
SCALE IN MILES

Keopu Well
North Kona, Hawaii

BELT COLLINS

EXHIBIT 3

EXHIBIT 3

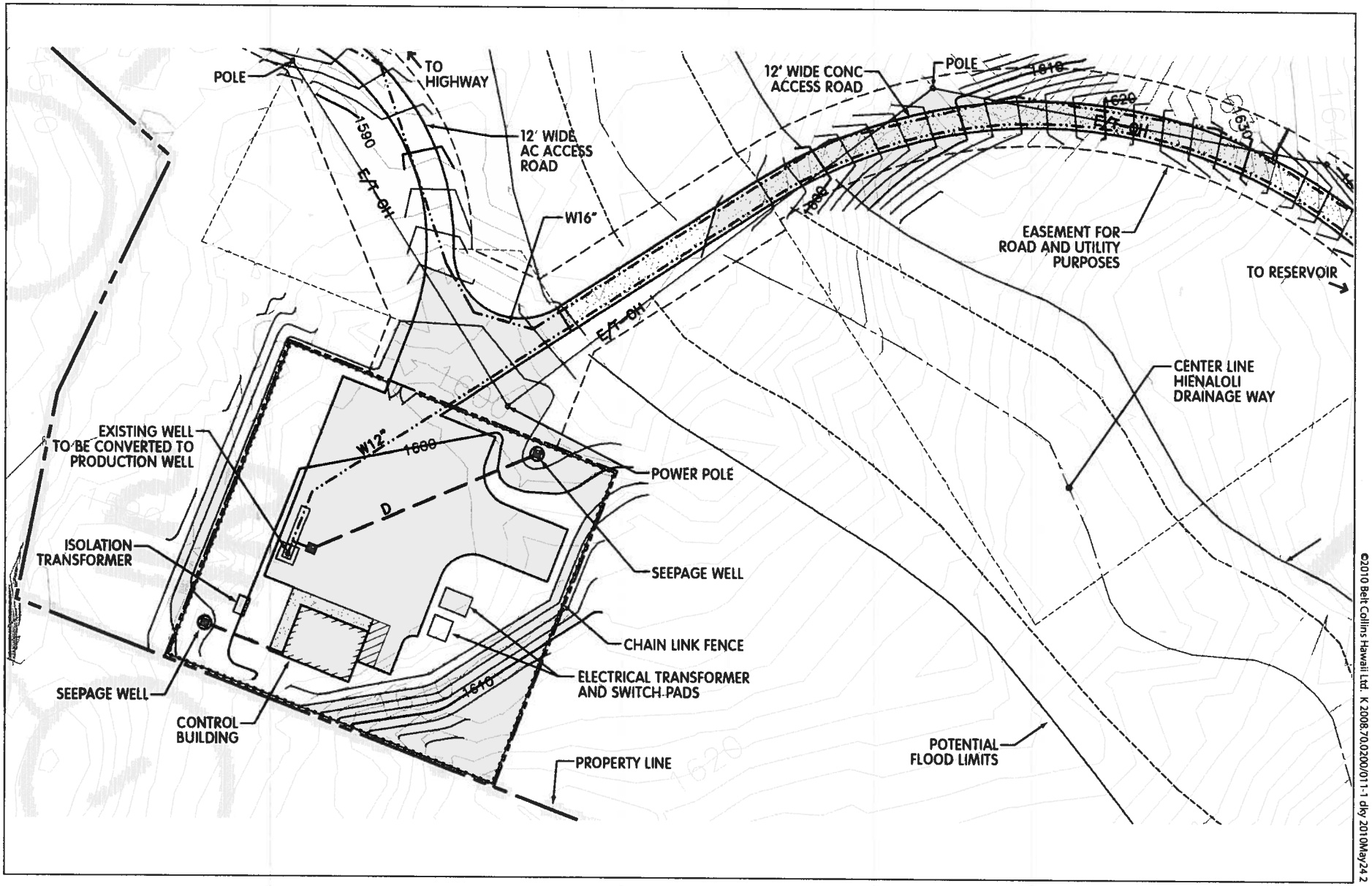


EXHIBIT 4

BELT COLLINS

NORTH

0 30 60
SCALE IN FEET

LEGEND

W	Water
E/T	Electrical/Telephone
OH	Overhead
D	Drain

Figure 4
PROPOSED PRODUCTION WELL AND ANCILLARY FACILITIES
Keopu Well
North Kona, Hawaii

EXHIBIT 4

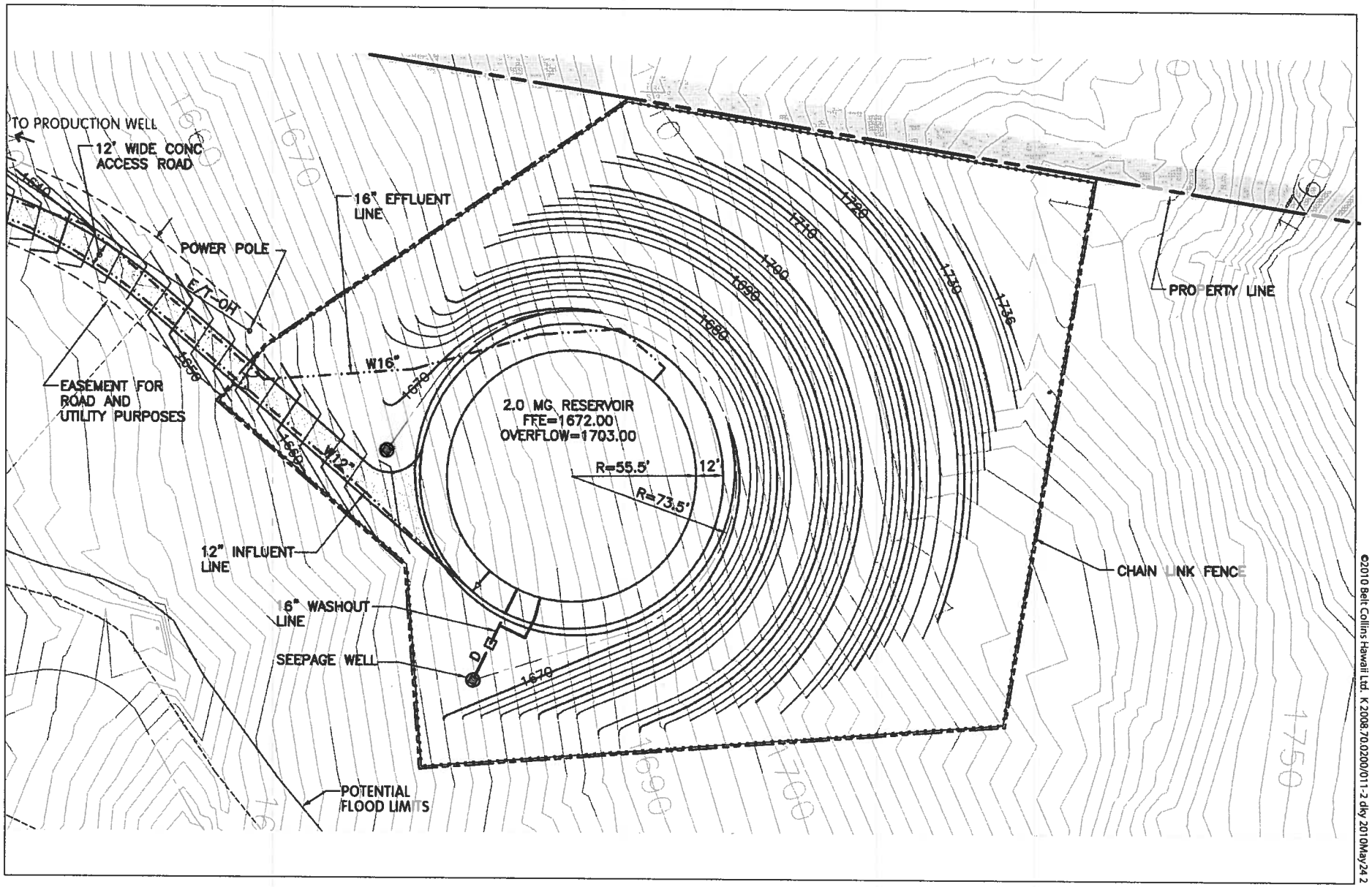


EXHIBIT 5

BELT COLLINS

NORTH

0 15 30 60
SCALE IN FEET

LEGEND

W	Water
E/T	Electrical/Telephone
OH	Overhead
R	Radius
D	Drain

Figure 6
PROPOSED 2.0 MG RESERVOIR
Keopu Well
North Kona, Hawaii

EXHIBIT 5

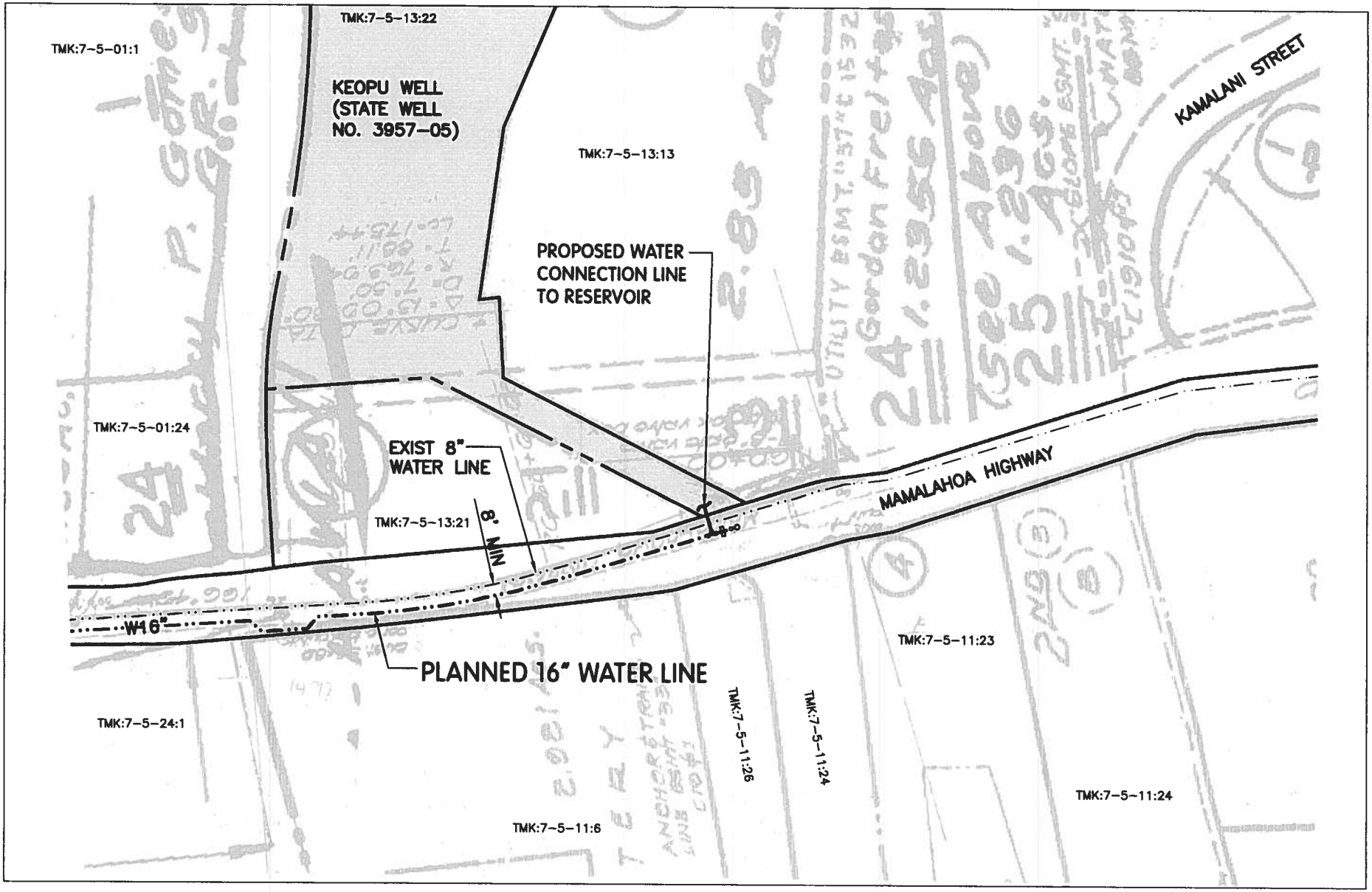


EXHIBIT 6

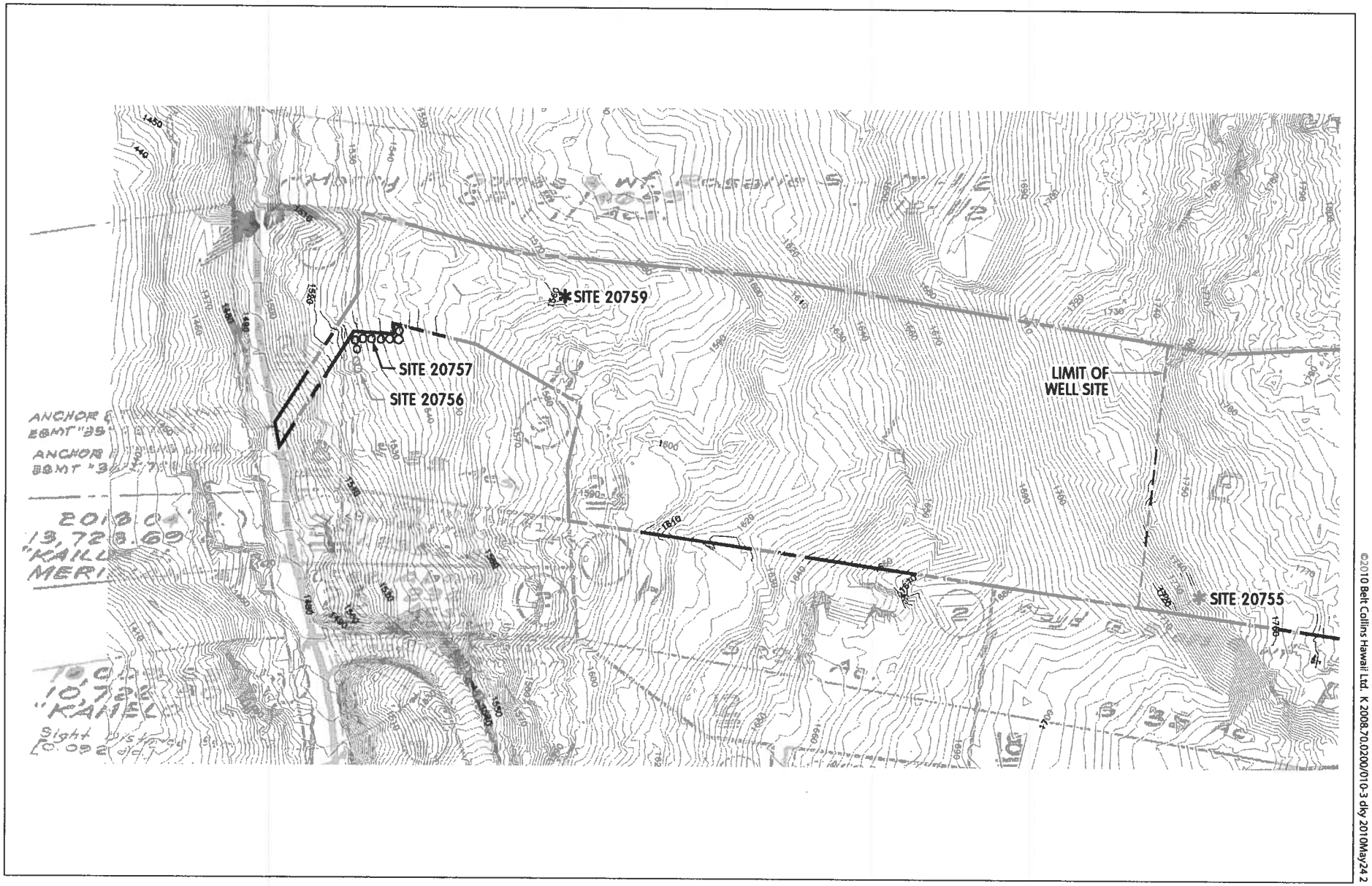
BELT COLLINS

NORTH

0 30 60 120
SCALE IN FEET

Figure 7
PLANNED MAMALAHOA HIGHWAY 16" WATER LINE—SOUTH TERMINUS
Keopu Well
North Kona, Hawaii

EXHIBIT 6



BELT COLLINS

NORTH

0 120 240
SCALE IN FEET

LEGEND

* Archaeological Site

OOOO Historic Wall

Figure 11
ARCHAEOLOGICAL SITES
Keopu Well
North Kona, Hawaii

EXHIBIT 7

EXHIBIT 7